

**Name: John Ford****Embry-Riddle Aeronautical University**

Aerospace Engineering (Astronautics)/Bachelors of Science/May 2015

Space Studies/Minor

E-mail: fordj9@my.erau.edu

Mentor(s): Jason Campbell

Mentor Org: ER51

**Ballistic Analysis and Preliminary Design of Launch Vehicle Solid Boosters**

Ballistic Analysis is a technique used to evaluate different factors and outcomes of a motor during launch and firing. I was given a pre-designed optimization trace called a pseudotrace which is a thrust-time plot giving the ideal thrust at a certain time during launch and other measurements such as propellant mass, burn time, and impulse. I had to change, create, and omit different parameters for the preliminary design of a launch vehicle solid booster in order to try and match the simulated trace given by SPP with the pseudotrace. Once I match the design trace with the pseudotrace, the grain design found during the research will have optimized performance and could be used for further development of large SRM boosters. Final vehicle performance checks were done on the trajectory of the motor through the POST program.

**Research and Experience**

- **Marshall Space Flight Center**, Summer Intern – NASA Academy, Summer 2012  
Advanced Propulsion Branch: Learn general and advanced knowledge in solid rocket propulsion and preliminary design and learn how to use NASA's Solid Performance Program (SPP); Find grain design for launch vehicle booster component through an optimization trace and SPP; perform final vehicle performance checks in the Program to Optimize Simulated Trajectories (POST).

**Memberships and Activities**

Member of AFROTC Fall 2010 – Fall 2011,

Active Member of Strike Eagle Squadron at Embry-Riddle Fall 2010 – Present, Treasurer Spring 2012,

Active Member of the Delta Colony of Phi Gamma Delta – Spring 2012 – Present, Founding Father

**Honors, Awards**

Dean's List Fall 2010,

Honor Roll Fall 2010 – Spring 2011,

AFROTC Commendation Award – Fall 2010,

AFROTC Top in Flight, Top Third in Class – Fall 2011,

Embry-Riddle Scholars Scholarship Recipient

Eagle Scout